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ABSTRACT

Two studies of the innovative semantic distinctions and innovative uses before the acquisition of conventional number classifiers by young Japanese children (aged 5-7 years) are discussed. The findings suggest that lexical acquisition is an intricate process which often requires more than simple mappings of forms onto categories, and that children's search for convention is very persistent. Children often conform to convention by modifying and refining their semantic categories on the basis of input data even though they have already mapped the items onto "good" conceptual categories, and they seem to continue their search for convention long after they have attained good productive control over the items, and when there is no communicative need to persist. (MSE)

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ACQUISITION OF SOME JAPANESE NUMERAL CLASSIFIERS THE SEARCH FOR CONVENTION

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In this paper[1] I am going to discuss some phenomena observed in the children's acquisition of Japanese numeral classifiers in connection with some problems of general lexical acquisition theory. The phenomena I will discuss are some cases of children's innovative semantic distinctions and innovative uses before children attain the conventional (=adult-like) classifier meanings. On the basis of our findings we will argue that children's acquisition of lexical items is often an intricate process that requires modification of semantic distinctions and refinements of uses in order to conform to conventional meanings, and that such a search of convention in language is a very persistent phenomenon that often goes beyond communicative need.

The lexical items we are going to discuss are Japanese numeral classifiers. Numeral classifiers are morphemes that occur in an adjacent position to numerals, and are employed in accordance with the nature of the entities whose number is being talked about. Similar expressions in English include sheet in the phrase "two sheets of paper." In many Asian, Micronesian and other languages morphemes like these are required in talking about the number of (almost) every kind of countable entity. In Japanese, for example, speakers employ a classifier -hiki in talking about animals as in ni-hiki-no saru (two-CLASS-ADNOMINAL monkey) 'two monkeys' and -hon in talking about long objects in hi-hon-no enpitsu (two-CLASS-ADNOMINAL pencil) 'two pencils.'

As the term classifier suggests, the semantic systems of classifiers have been studied as a linguistic representation of human classification of the entities in the world. Cross-linguistic studies of these items (e.g. Adams & Conklin, 1973) have shown that animacy distinctions and shape categories like ROUND, LONG, and FLAT play important roles in classifier systems, which some researchers interpret as reflecting the saliency of those properties in the non-linguistic conceptual level (Clark, 1977).

Recently Clark has proposed a new theory of lexical acquisition: Lexical Contrast Theory. In this theory she claims that lexical acquisition is governed by 1) Principle of Conventionality, which states that there are conventional meanings that are assigned to certain forms in a language community, as well as 2) Principle of Contrast, which states that every two words contrast in their conventional meanings. Further, she claims that the lexical acquisition is governed by the communicative need to convey meanings that cannot be conveyed by words already known.

When we try to look at the acquisition process of classifiers in terms of a search for convention as suggested by Clark, the following aspects of classifier meanings would be relevant for discussion.

In talking about the conventional meanings of classifiers we may recognize at least two kinds of convention that children have to acquire. First, it is up to the convention of a particular language what properties of the entities are linguistically relevant in a classifier system. For example, some languages have a classifier used specifically for flat objects, while other languages do not (Adams & Conklin, 1973). Languages are selective in adopting relevant properties in their classifier system.

Secondly, in has been revealed that languages often differ in their deci-

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sion about what objects count as referents of equivalent classifiers. Adams & Conklin has found that in languages which have classifiers for long rigid objects and long flexible objects, roads are classed as long flexible objects in some languages and as long rigid objects in other languages. Such a decision about the membership of a classifier category in the borderline (or "atypical") cases appears to be left to the convention of the particular language.

The second aspect of convention is not probably peculiar to classifiers (see Talmy, 1983 for a similar phenomenon in prepositions). Researchers of lexical acquisition have, however, paid little attention to this aspect. One exception is Carey (1977). She noted that an English dimensional adjectives thin can be applied to various objects (e.g. door, pen, lip, skin etc.) whose common dimension of application is not necessarily apparent. She suggested that such a complex use of the adjective is one support for her "missing-feature-plus-haphazard-examplar theory" in which she claims that early lexical meanings are based on the specific examples of application.

One aim of the present study is to show how children acquire these two kinds of convention in their acquisition of these items.

Another aspect of classifiers that is relevant for our discussion is the communicative utility of these items. Classifiers have been regarded as communicatively marginal items by many researchers. Downing (1984), for example, observes that Japanese classifiers are typically used to "acknowledge the membership of a referent in a particular category, rather than to inform us of that fact or to identify the referent in question." This is not surprising since the primary aim of using a numeral expression (which consists of a numeral and a classifier) is to talk about the number of objects rather than to talk about the property of objects. This property of classifiers will turn out to be relevant in our discussion of the motivation of the acquisition of those items.

Classifiers in Japanese include the items listed in Table 1.

Table 1. Main Japanese Numeral Classifiers

-ri/-nin (allomorphs)	human beings
-hiki	non-human animate beings in general
-wa	winged animate beings
-too	animals larger than human beings
-tsu	inanimate objects in general
-ko	saliently three dimensional objects (inanimate objects in general in some speakers)
-hon	saliently one-dimensional (long) objects
-mai	saliently two-dimensional (flat) objects
-tsubu	saliently zero-dimensional (small roundish) objects
-dai	large mechanical objects (placed on the land)
-soo	boats
-seki	ships
-ki	planes and plane-like flying objects
-satsu	bound objects
-ken	houses

The picture of the acquisition process of Japanese classifiers has been clarified by Muraishi (1957), Sanches (1978), and Matsumoto (1985). The findings of those researchers suggest that, in general, the child's acquisition proceeds from an item which has a general application to an item

which has a more restricted application. The first classifier that children use is -tsu and/or -ko, classifiers for inanimate objects in general, which children usually overextend to animate beings. The next classifier to appear is usually -ri/-nin, a classifier for human beings, which some children overextend to non-human animate beings. Next, -hiki, a classifier for non-human animate beings in general, usually appears, followed by -dai, a classifier for large mechanical objects, -hon, a classifier for long or saliently one-dimensional objects, and -mai, a classifier for flat or saliently two-dimensional objects. Few other classifiers are used at the age of 6.

The classifiers we would like to discuss in this paper are -dai and -hon. Our discussion is based on the results of production experiments conducted on 5-, 6- and 7-year olds. One important point in these experiments is the inclusion in our test materials of novel or at least relatively unfamiliar entities which children are not likely to have heard being counted. We decided to do this because we can attribute a knowledge of semantic criteria to children only when they have applied the item to new instances (see Gandour, et. al., in press, for this suggestion in classifier study). However, it was not always possible to prepare a good instance of a novel entity especially when the classifier in question was quite restricted in its application.

First, let us consider -dai. -Dai is a classifier for large mechanical objects. It is used for land-vehicles such as cars and trucks, and non-vehicle machines and appliances such as TV sets and radios. The classifier is not, however, usually used for non-land vehicles like airplanes and boats, which require more specific classifiers -ki and -soo or -seki respectively. We will now look at Experiment A to examine children's use of -dai.

Experiment A

Method

Subjects: 36 children living in Tokyo, who range from 5;0 to 7;11. They were divided into three age groups: twelve 5-year olds, twelve 6-year olds, and twelve 7-year olds.

Materials: Two pictures of the following objects were prepared. Cars and *imaginary tanks called "jetto mogura" (land vehicles), and TV sets and *electric typewriters (non-vehicle machines), which require -dai; flying jet liners and *flying gliders, which require -ki; and small sailing boats and *sailing canoes, which require -soo. Asterisked objects were intended to be unfamiliar objects. These objects were mixed with more than twelve other objects that require other classifiers.

Procedures: Subjects were shown those pictures and were instructed to give an account of each picture. While a child was presented a picture, the experimenter helped the child by asking a few questions. They included questions about what were in a picture and how many there were. The second question, which was relevant for our purpose, was "Kokoni ... wa doredake arimasuka?" (' How many are there?'). This is the most general or vague way of asking number and amount in Japanese and no clue as to a correct classifier was given. Children's usual responses consisted of numerals and classifiers, of which only classifiers were relevant for our purpose. Ten adult speakers were tested through the same method and it was found that all the objects drew expected classifier responses on more than 85% of the relevant occasions. Most of the other responses saw the use of general classifiers. All the adult subjects acknowledged the acceptability of the expected classifiers for all of our materials. When we had children name the unfamiliar objects in the experiment, it turned out that most children did not give the expected names but usually gave more or less appropriate names for them (e.g. hikooki 'plane' for gliders). In that case the experimenter gave the correct names.

Results and Discussion

The results are shown in Table 2. It indicates the percentage of the use of each classifier for each object in the total responses by each group. The sections enclosed in bold lines indicate the uses of the appropriate classifiers. The table suggests two noticeable phenomena. The first is the frequent use of -dai for flying airplanes and sailing boats, for which adults would not usually use -dai. Another noticeable point is that there were very few observed uses of -dai for non-vehicle machines, which require -dai in adult language. An anlysis of the individual response patterns is shown in Table 3. A "1" indicates that -dai was used in over 75% of the occasions for each kind of object, and a "0" indicates that -dai was not used so consistently. The number of subjects who showed each response pattern is given in the right-most column. The table shows that more than half of our subjects did not use -dai consistently for any kind of objects. The next common response pattern was its use for all vehicles. There were also many children who used the classifier for land vehicles and airplanes but not for boats, which differ from the other vehicles in that they do not look mechanical or as if they move by themselves. This means that there were many children who mapped the classifier -dai onto the category vehicles or certain subsets of them instead of the conventional category "large mechanical objects" which excludes airplanes and boats. This innovative semantic distinction is not a case of overextension, nor a case of underextension, but an interesting case of "overlap", in which children's referential domain of a lexical item only partially overlaps with conventional referential domain of the item.

Table 2. The results of Experiment A. Children's use of classifiers for vehicles and non-vehicle machines.

kinds of objects	objects \ class \ age	responses														
		-dai			-ki			-soo			-tsu/-ko			others		
		5	6	7	5	6	7	5	6	7	5	6	7	5	6	7
land vehicles	cars	38	67	79							63	33	17			4
	*tanks	16	46	54							79	54	46	4		
non-vehicle	TV sets		4	17							100	92	71		4	12
	*type-writers		17	17							96	83	75	4		8
airplanes	jet liners	21	50	58		4					75	42	33	4	4	8
	*gliders	25	46	54		8					67	42	46	8	4	
boats	small boats	29	29	50					8		71	58	38		4	13
	*canoes	29	21	33					17	4	67	58	42	4	4	21

Table 3. Individual response patterns of -dai.

non-vehicle machines	land vehicles	airplanes	boats	the number of subjects
0	0	0	0	18
0	1	0	0	3
0	1	1	0	5
1	0	1	1	1
0	1	1	1	8
1	1	1	1	1

This interesting mis-mapping of -dai begs an explanation. It can be attributed to two factors. The first is the pattern of the use of this classifier in the input. This classifier appears to be far more frequently used for vehicles than non-vehicle machines, although we have no statistics to support this intuition at present. This factor may account for the children's failure to use the classifier for non-vehicle machines, but it alone does not explain why they overextended this classifier to airplanes and boats, for which adults do not usually use the classifier. Another factor that seems to be at work is the saliency and the tightness of the category of vehicles. A category vehicle, which is a well studied category in the literature, is one of the categories about which children manifest considerable knowledge from an early age (Rescorla, 1981). In addition, the movement with which vehicles are associated is a very salient feature for children (Clark, 1974). Such a category would be more likely to be selected as a category onto which a linguistic form is mapped than the cognitively less transparent category of -dai. It would then be most likely that the availability of a salient category of vehicles and the frequent use of the classifier for certain kinds of vehicles worked together to mislead children to mismap -dai onto the wrong but related category.

This innovative semantic distinction in the use of -dai persists for a very long time. Few 7-year olds in our experiment used -dai for non-vehicle machines or appliances, and few 7-year olds used -ki and -soo which they have yet to acquire to contrast them with -dai. Our findings suggest that the modification of the semantic distinction made in -dai, which should be triggered by further exposure to the use of -dai for non-vehicle machines and the use of -ki and -soo, actually takes place long after children acquire a productive control over the classifier.

The next classifier we would like to discuss is -hon, a classifier for long or saliently one-dimensional objects. The classifier can be used for a variety of long slender objects, long or flexible, vertically oriented or otherwise, etc, although these properties are linguistically relevant in some languages. This classifier has an interesting internal structure. In its prototypical or paradigm cases it is used for non-rolled, very long and slender objects such as pencils and sticks. Atypical members of the category include those objects whose saliency of one-dimensional extension is not so apparent. They include teeth and pants, which are not so saliently one-dimensional, tulips, which look saliently one-dimensional only when one pays attention to their stems, and cassette tapes, which are, unlike usual long slender objects, rolled in their normal state. Experiment B was designed to look at children's use of this classifier for these various members of the classifier category.

Experiment B

Method

Subjects: 34 children living in Tokyo, who are divided into twelve 5-year olds, ten 6-year olds, and twelve 7-year olds.

Materials: Two pictures of the following objects were prepared. They were pencils, pens, *test tubes, and *rasps (long rigid objects); strings and *cords (long flexible objects); trees and *telephone poles (long vertical objects); teeth, tulips, pants and cassette tapes (atypical members). Asterisked objects were intended to be unfamiliar ones. These objects were mixed with more than twelve other kinds of entities, both animate and inanimate.

Procedures: the same as in Experiment A. Ten adult speakers were tested through the same method and it was found that all of the objects above drew the use of -hon on more than 85% of the relevant occasions. All the other

responses saw the use of -tsu or -ko. All the speakers acknowledged the acceptability of -hon for all of them.

Results and Discussion

The results are shown in Table 4. It indicates the percentage of the use of each classifier for each object in the total responses by each group. Our results revealed that there was a significant difference between the children's responses for typical long objects and atypical long objects. As the table shows few children used -hon in referring to atypical long objects except for teeth, and tulips in 7-year olds. There were no significant differences between the responses for familiar and novel objects.

Table 4. The results of Experiment B. Children's use of -hon.

kinds of objects	class / objects / age	Responses: -hon			-mai			-tsu/-ko			others		
		5	6	7	5	6	7	5	6	7	5	6	7
long rigid	pencils	29	50	63				71	50	38			
	pens	29	35	58				71	65	42			
	*test tubes	25	35	54				75	60	46		5	
	*rasps	33	50	58				67	50	42			
long vertical objects	trees	38	50	58				63	50	42			
	*telepone poles	29	50	54				71	50	46			
long flexible objects	strings	29	25	54				71	75	46			
	*cords	21	40	42				79	60	58			
"atypical" long objects	teeth	21	20	50				79	80	50			
	tulips	8	5	50				92	95	50			
	pants	4		13		10	17	96	85	71		5	
	cassette tapes		5	4	4		9	96	95	88			

Our results suggest that those children who used -hon generally know that the classifier is used for long or saliently one-dimensional objects. This is shown by the fact that they used -hon correctly for novel or less familiar long objects. However, it appears that those children do not know that some atypical long objects count as referents of this classifier according to the convention made in the Japanese language. This means that those children who attained adult-like abstract knowledge about the application of -hon still have to refine their uses of the classifier in order to use it for atypical cases. Such refinement is presumably triggered by an actual exposure to such uses in the input. We would interpret the differences in the correct responses for the four atypical objects as partly reflecting the difference in the degree of children's exposure to the actual use of -hon for these four objects.

The need for later refinement of classifier uses can also be seen in the innovative use of -mai for pants and cassette tapes, which was observed in some children. -Mai is a classifier for flat or saliently two-dimensional objects. The use of this classifier for pants and cassette tapes is a plausible or motivated one, since these objects can also be looked at as flat objects. Those who used -mai for them must have based their response on their own perception of those objects as flat objects. However, the conventional Japanese classifier system does not exploit the possibility of looking at those objects as flat objects. Those children who used -mai for them have yet to learn that those objects are regarded as long objects according to the convention of Japanese.

One might come up with the following alternative interpretation of the differences in the use of -hon for typical and atypical referents. Even in the adult use, atypical members of a classifier category tend to allow the use of a general classifier more readily than typical members (Downing, 1984). One might argue that the observed differences in the children's use of -hon for typical and atypical members are a reflection of this characteristic of atypical members rather than the lack of knowledge about the membership of atypical referents. This account, however, does not explain why the use of -mai was observed for some objects. In fact, children's uncertainty about the membership of atypical cases can be seen from the fact that most of the children who responded with -hon for teeth gave their responses in a rising intonation, as if they were trying to confirm the correctness of their use.

Our interpretation of the findings about -hon differs in an interesting way from Carey (1978)'s interpretation of her findings on English dimensional adjectives. She found that children did not always respond correctly in all the relevant uses of the adjectives. This finding, along with an observation that the dimension to which these adjectives are applied is not often apparent, has lead her to suggest that early word meanings are examplar-based. Our present experiment also showed that children did not use -hon correctly in all the relevant occasions. This does not, however, mean that children's use of -hon is examplar-based. On the contrary, they seem to know the semantic criterion of the saliency of the one-dimensionality. Our finding suggests, instead, a possibility that children have to learn the use of -hon for atypical referents in an item-by-item fashion, for the acquisition of the knowledge of the membership of atypical members of a classifier category seems to depend heavily on the actual exposure to these uses in the input. Whether a similar process can be seen in dimensional adjectives awaits examination.

General Discussion

What do our findings on the two particular cases of children's classifier uses suggest?

First, our findings provide good examples to show that lexical acquisition is an intricate process that often requires more than simple mappings of forms onto categories, a view which has been most clearly argued for by Bowerman (1981). Even though classifiers reflect cognitive salience of certain categories, they are a matter of linguistic convention. Therefore, as our findings suggest, children often have to conform to the convention by modifying and refining their semantic categories on the basis of input data, even though they have already mapped the items onto "good" conceptual categories. The children's categories of -dai and -hon which we have seen suggest that children's innovative semantic categories can often been seen as representing a more natural classification. The child is often a better category maker than language, which often presents conventionalized cognitively less natural semantic categories for various (e.g. historical) reasons.

Secondly, our findings suggest that children's search for convention should be a very persistent phenomenon. Our results suggest that they often have to continue their search for convention long after they have attained a good porductive control over the items. This finding is consistent with Clark's view of lexical acquisition in the sense that such phenomena cannot be conceived without reference to the children's assumption about the conventionality of lexical meanings and their persistent inclination for it.

What makes the persistency of the inclination for convention even more striking is that classifiers are communicatively marginal items in the sense we have seen earlier. That classifiers are not used in talking about something accounts for the fact that classifier acquisition takes place relatively later in language acquisition. The use of general classifiers, which is observed in the 7-year olds even in cases where relatively early acquired

classifiers like -dai and -hon are preferred, may not cause much trouble in actual communicative settings. In spite of this, however, children acquire the categories of those communicatively marginal items often after the persistent search for convention as our data suggest. Such a search for convention at a later stage of lexical acquisition, it seems to me, can no longer be said to be motivated by the need to find linguistic forms for conceptual categories that children want to talk about. Rather, it would be more appropriate to say that the search is governed by the motivation to become full-fledged native speakers expected by the language community. Our findings suggest, then, that the child's search for convention is so persistent a phenomenon that it often continues without much communicative need.

NOTES

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REFERENCES

Adams, K. and Conklin, N. 1973. "Toward a Theory of Natural Classification." CLS 9,1-10

Bowerman, M. 1981. "Beyond Communicative Adequacy: From Piecemeal Knowledge to an Integrated System in the Child Acquisition of Language." PRCLD 20.

Carey, S. 1978. "The Child as Word Learner," In Linguistic Theory and Psychological Reality. Eds. M. Halle, J. Bresnan and G. Miller, Cambridge: MIT Press.

Clark, E. 1977. "Universal Categories: On the Semantics of Classifiers and Children's Early Word Meanings." In Linguistic Studies offered to Joseph Greenberg on the Occasion of His Sixtieth Birthday. Ed. A. Juilland. Saratoga, Calif.: Anma Libri.

Clark, E. 1983. "Meanings and Concepts." In Carmichael's Manual of Child Psychology: Vol. 3 Cognition. Ed. P. Mussen. New York: John Wiley & Sons.

Downing, P. 1984. "Japanese Numeral Classifiers: A Semantic, Syntactic, and Functional Profile." Ph.D. Thesis UC Berkeley.

Gandour, J., Petty, S., Dardarananda, R., Dechongkit, S., and Mukegoen, S. in press. The Acquisition of Numeral Classifiers in Thai.

Matsumoto, Y. 1985. "Japanese Numeral Classifiers: Their Structures and Acquisition." unpublished.

Muraishi, S. 1967. "Yooji-no Josuushi-no Choosa" (A Research on Children's Numeral Auxiliaries). Shotoo Kyooiku Shiryoo 214.

Rescorla, L. 1981. "Category Development in Early Language ." JChLg 8.

Sanches, M. 1978. "Language Acquisition and Language Change: Japanese Numeral Classifiers." In Sociocultural Dimensions of Language Change. Eds. M. Sanches and B. Blount. New York: Academic Press, 1978.

Talmy, L. 1983. " How Language Structures Space." In Spatial Orientation: Theory, Research, and Application. Eds. H. Pick and L. Acredolo. Plenum Press.